



Upper Animas Mining District fact sheet

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Red and Bonita Mine Bulkhead Construction

Introduction

The EPA Superfund Program is conducting a time-critical removal action at the Red and Bonita Mine site during the summer 2015. The action involves installing an engineered, reinforced bulkhead (*i.e.* massive plug) to control the discharge of contaminated water coming out of the mine adit (*i.e.* tunnel) and flowing into Cement Creek, a tributary of the Animas River.

Along with this work, EPA also plans to remove the blockage and reconstruct the portal at the Gold King Mine in order to best observe possible changes in discharge caused by the installation of Red and Bonita Mine bulkhead. The Gold King Mine is the closest mine to the Red and Bonita Mine and is located higher on the mountain. Entry into the Gold King Mine workings will depend on the conditions encountered following portal construction.

Need

EPA is undertaking this work because of the impact heavy metals in acid mine drainage from the Red and Bonita Mine adit have on water quality in the Animas River. Water quality standards are not achieved in the Animas River near Silverton.

The discharge from the Red and Bonita Mine represents a significant contribution of heavy metals, including zinc, to the Animas River.

Sampling results in 2012 and related USGS modeling show the discharge of acid mine drainage from the Red and Bonita Mine accounts for an estimated 18 percent of the zinc load at station A72, a location on the Animas River one mile below Silverton.

Impacts to aquatic life are demonstrated by fish population surveys conducted by Colorado Parks and Wildlife, which found no fish in the Animas River below Cement Creek for approximately two miles and observed precipitous declines in fish populations as far as 20 miles downstream since 2005.

Goal

The goal of this removal action is to prevent or reduce continued releases of heavy metals into the environment from the Red and Bonita Mine. The bulkhead, which will include a valve, will provide a hydraulic control to prevent and/or manage the ongoing discharge of approximately 300 gallons per minute of acid mine drainage from the Red and Bonita Mine to Cement Creek.

By retaining the water in the Red and Bonita Mine workings, the water-filled portions of the workings will gradually be denied the oxygen that contributes to acid production and leaching metals.

Water quality monitoring will be performed before and after the bulkhead is constructed and the valve closed. Conditions will be monitored over the course of the year, including monitoring nearby mines for changes in flow and water quality.

The bulkhead will be constructed with piping and a relief valve to allow the option of restoring free flowing conditions. The water level behind the bulkhead can be reduced, if this is deemed necessary, to address adverse impacts. If future remedies require the need to move water to another location, the piping will be in place at the bulkhead to allow for controlled management of the flow.

Anticipated Results

It is anticipated that zinc concentrations in the Animas River below Silverton will be reduced soon after the bulkhead valve is closed. Sampling will be performed to assess the changes. Other changes may include an increase in flow from nearby adits, which EPA will also monitor.

Background

The watersheds within the volcanic terrain of the San Juan Mountains were the focus of both large- and small-scale mining operations between 1871 and 1991.

Historic mapping of the Red and Bonita Mine indicates that mining operations began prior to 1899 and lasted for only a short period of time.

The Red and Bonita Mine site consists of approximately 1.25 acres of waste rock and suspected tailings material and includes an estimated 3,500 feet of underground workings.

The Red and Bonita Mine is located within the Cement Creek watershed, a component of the Upper Animas River Watershed, in unincorporated San Juan County, Colorado. The portal is located approximately seven miles north of the Town of Silverton, at 10,893 feet above mean sea level.

Planned Activities

The EPA plans to begin work at the Red and Bonita Mine in July 2015.

Installation of the bulkhead includes the following elements:

- 1) Establishing temporary water treatment and settling pond(s);
- 2) Removing the precipitated solids (*i.e.* sludge) from approximately 300 feet of the mine adit;
- 3) Constructing an onsite repository for the solids removed from the mine;
- 4) Preparing the section of the adit for the bulkhead;
- 5) Constructing the concrete bulkhead with piping and valves for future management flexibility.

Bulkhead construction is targeted for completion on or before Sept. 30, 2015. Valve closure will occur sometime shortly after completion.

Figure 1: Red and Bonita Location Map

